



**STRUCTURE WITH SEALING MEANS BETWEEN SIDES OF
CURTAIN WALL UNITS AND ONE END OF A BUILDING WALL**

This invention relates to a structure with sealing means for maintaining air-tightness and water-tightness between sides of a plurality of curtain wall units forming one end of a curtain wall and one end of a perpendicularly extending building wall.

As disclosed in Japanese Utility Model Laid-open (Provisional) Publication No. Sho 57-27012, there has been known a structure in which sides of a plurality of upper and lower curtain wall units forming a curtain wall are connected by a connecting member and indoor-side and out-door-side caulking are applied between those sides and a building wall to form vertical hollow chambers. Further, a caulking for interconnecting the indoor-side and outdoor-side caulking is applied to make independent each hollow chamber formed between each end portion of the curtain wall unit and the building wall, which hollow chamber is opened to the outdoor side.

In such a structure, it is possible to prevent rain water, etc. from entering the indoor side from between the sides of the curtain wall units and the building

wall, but since the indoor-side and outdoor side caulking as well as the caulking for interconnecting both caulking must be applied, the executive operations therefore are troublesome. Besides, because the execution of the caulking is performed at the building site, it is likely that there will occur an execution error, etc., thus impairing reliability.

Particularly, since the caulking for interconnecting the indoor-side and outdoor-side caulking must be applied into a narrow space between the sides of the curtain wall units and a building wall, the executive operations therefor are extremely troublesome.

It is believed possible by means of the present invention to provide a structure capable of surely preventing rain water, etc. from entering the indoor side from a vertically extending space formed between respective sides of a plurality of curtain wall units and one end of a perpendicularly extending building wall, permitting a simple and easy executive operations therefor and further permitting a smooth discharge to the outdoor side of rain water, etc. entering between the sides of the curtain wall units and the end of the building wall.

According to the present invention, there is provided a structure comprising a curtain wall and a

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building wall, the curtain wall being formed of mutually adjacent curtain wall units arranged side-by-side and one above another at a certain distance from each curtain wall unit to the next one, the building wall extending substantially perpendicularly to the curtain wall, sides of curtain wall units at one end of the curtain wall being spaced apart from one end of the building wall at a corner of the structure to provide a vertically extending space therebetween, which space is sealed by sealing means which comprises a plurality of packing members which are closely interposed between the end of the building wall and the sides of the curtain wall units at the end of the curtain wall.

The invention will be described by way of example with reference to the accompanying drawings, wherein:-

Figure 1 is a fragmentary schematic side elevational view, part broken away, showing a mounted state of a plurality of curtain wall units forming a unit type curtain wall above a decorative facing wall;

Figure 2 is a sectional detailed view in plan, taken along line II-II of Figure 1;

Figure 3 is an enlarged detailed view of the portion generally indicated by arrow III of Figure 1; and Figure 4 is a sectional view taken along line IV-IV of Figure 3.

Figure 1 is a schematic side view of a plurality of curtain wall units A mounted and disposed continuously in the vertical and the horizontal directions at a certain distance to one another to constitute a curtain wall CW.

Referring particularly to Figs. 1 and 2, the illustrated structure comprises a curtain wall CW and a building wall. The building wall B, shown extending horizontally in Fig. 2, extends substantially perpendicularly to the curtain wall CW, shown extending vertically in Fig. 2. The curtain wall CW is formed of mutually adjacent curtain wall units A, arranged side-by-side and one above another at a certain distance from each curtain wall unit A to the next one, Fig. 1 showing the relative distancing of the lower end portions A_1 and upper end portions A_2 of mutually adjacent curtain wall units A at one end of the curtain wall CW. The curtain wall is directly above and extending upwardly from a decorative facing wall C.

As shown in Fig. 2, sides of the curtain wall units at the end of the curtain wall are spaced apart from one end of the building wall B at a corner of the structure, to provide a vertically extending space therebetween. This space is sealed by sealing means which includes a series of packing members 1 arranged one above another (Fig. 1) and closely interposed (Fig. 2) between the end

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of the building wall B and the sides of the curtain wall units A at the end of the curtain wall.

An upper part 1a of each packing member 1 is bent towards the indoor side and extends up to the lower end portion A_1 of the overlying curtain wall unit A, while a lower part 1b of each packing member 1 is bent towards the outdoor side and extends down to the upper end portion A_2 of the underlying curtain wall unit A, where it is in pressure contact with the outdoor side of the upper bent portion 1a, to thereby provide a seal between the connection of the upper and lower curtain wall units A and the building wall B.

The lower bent part 1b of the packing member 1 attached to the bottom unit A is inserted into the interior of a space D which is defined by a drip member 2 and a water-proof sheet 3, both disposed between the outer decorative facing wall C of the building and the lower portion of the bottom unit A and which is separated water-tightly from the indoorside. Further, a drain hole 4 is formed in the drip member 2 to open the space D to the outdoor side, whereby rainwater or the like entering between the lower end portion A_1 of the bottom unit A and the building wall B flows down into the space D along respective outdoor sides 1c of the packing members 1 and is drained to the outdoor side through the drain hole 4, thus being prevented from

entering the indoor side of the curtain wall.

Figure 2 is a sectional detailed view taken along line II-II of Figure 1, in which a vertical end member 5 of the unit A comprises an indoor-side vertical member 6 and an outdoor-side vertical end member 7 which are connected through a spacer 8 formed of a heat insulating material, and between an outer wall 6a of the indoor-side vertical end member 6 and an inner surface B_1 of the building wall B are interposed the packing members 1 on the outdoor side, while on the indoor side is applied a caulking 10 upon a backup member 9.

An angle member 11 is fixed to an end portion of the outdoor-side vertical end member 7 and a mounting member 12 is fixed to an outer surface B_2 of the building wall B, and a corner frame member 13 extends between the mounting member 12 and the angle member 11. Further, between one end 13a of the corner frame member 13 and the outdoor-side vertical member 7 is applied a caulking 15 upon a backup member 14, while between the opposite end 13b of the corner frame member 13 and an outer decorative panel 16 is applied a caulking 18 upon a backup member 17.

A space E is formed between the outer wall 6a of the indoor-side vertical end member 6 and the inner surface B_1 of the building wall B. Its width L_1 (i.e., the

distance between the outer wall 6a and the inner surface B_1) is set at a value capable of absorbing relative displacements of the unit A in the vertical and the transverse directions with respect to the curtain wall plane caused by earthquake, thermal expansion, etc.

Referring now to Figures 3 and 4, which are an enlarged detailed view of the portion generally indicated by arrow III of Figure 1 and a sectional view taken along IV-IV of Figure 3, respectively, the lower portion of the indoor-side vertical end member 6 projects lower than the lower portions of the spacer 8 and outdoor-side vertical end member 7 and is positioned above a building foundation F. A primary fastener 20 is fixed onto the upper portion of the building foundation F, onto the primary fastener 20 a secondary fastener 21 is fixed by means of a bolt and nut 22, and onto the secondary fastener 21 is fixed a tertiary fastener 23 by means of a bolt and nut 24. Further, in an upward recess 25 of the tertiary fastener 23 is fitted a block 27, the block 27 being fixed to a lower wall 26a of a lower horizontal member 26 which is connected to the indoor-side vertical end member 6, and the lower portion of the unit A is connected to the building foundation F through the fasteners 20, 21 and 23.

A damp-proof sheet 28 is mounted over both an out-door-side wall 6b of the projecting portion of the

indoor-side vertical end member 6 and an outdoor-side face F_1 of the building foundation F. The damp-proof sheet 28 as well as the water-proof sheet 3 extend over both an outdoor-side face B_3 and outer face B_2 of the building wall B, and an end portion of the damp-proof sheet 28 is fixed to the outer face B_2 of the building wall B by means of the mounting member 12.

Upper end portions 28a and 3a, respectively, of the damp-proof sheet 28 and the water-proof sheet 3 are held in pressure contact with the outdoor-side wall 6b of the projecting portion of the indoor-side vertical end member 6 through a mounting piece 29.

The drip member 2 comprises a rising portion 2a, an inclined portion 2b, an outdoor vertical portion 2c, an inward portion 2d and a rising portion 2e, the rising portion 2a being connected to the outdoor-side vertical end member 7 through a mounting member 30. Continuously to the drip member 2 are mounted an end drip member 31 and a side drip member 32, and a caulking receiver 33 is mounted under both the drip member 2 and the end drip member 31. Further, a space 34 is formed between the caulking receiver 33 and the backs of the drip member 2 and end drip member 31, and a caulking 36 is applied to the space 34 upon a backup member 35 to provide a seal between opposed ends of the drip member 2 and the end drip member 31.

Between the lower portion of the indoor-side member 6 and the drip member 2 is applied a caulking 38 upon a backup member 37, and a caulking 40 is applied upon a backup member 39 over the lower portion of the corner frame member 13 as well as an inclined portion 31a of the end drip member 31 and an inclined portion 32a of the side drip member 32, the caulking 40 being contiguous to the caulking 38.

The outer decorative facing wall C of the building comprises a style strip 41, a mortar layer 42 and a heat insulating panel 43, with the inward portion 2d of the drip member 2 being positioned above the style strip 41a. Further, an end portion of the water-proof sheet 3 is in abutment with the inward portion 2d, and the water-proof sheet 3 covers both an upper surface 42a of the mortar layer and an upper surface 43a of the heat insulating panel to prevent the entry of rain water, etc. into the outer decorative facing wall C. In addition, the damp-proof sheet 28 prevents damp from being transmitted to the indoor side along the outer decorative facing wall C.

In Figures 3 and 4, the numeral 44 denotes a connector for connection between a rising portion 31b of the end drip member 31 and a rising portion 32b of the side drip portion 32; numeral 45 represents a connector for connection between outdoor vertical portions 32c and

31c; numeral 46 denotes a backup member; and numeral 47 represents a caulking.

CLAIMS

1. A structure comprising a curtain wall and a building wall, the curtain wall being formed of mutually adjacent curtain wall units arranged side-by-side and one above another at a certain distance from each curtain wall unit to the next one, the building wall extending substantially perpendicularly to the curtain wall, sides of curtain wall units at one end of the curtain wall being spaced apart from one end of the building wall at a corner of the structure to provide a vertically extending space therebetween, which space is sealed by sealing means which comprises a plurality of packing members which are closely interposed between the end of the building wall and the sides of the curtain wall units at the end of the curtain wall.

2. A structure as claimed in Claim 1, characterized in that an upper part of each of the packing members is bent towards the indoor side and extends up to a lower end portion of an upper one of a respective pair of mutually adjacent curtain wall units which are one above another, whilst a lower part of each of the packing members is bent towards the outdoor side and extends down to an upper end portion of the lower one of a respective pair of mutually adjacent curtain wall units one above another, and in that the upper part of each one of the packing members and



the adjacent lower part of another of the packing members are in pressure contact with each other.

3. A structure as claimed in Claim 2, characterized in that the bottom bent part of the lowermost packing member mounted between the bottom curtain wall unit and the building wall is inserted into a space water-tightly separated from the indoor side of the curtain wall and formed by a drip member and a water-proof sheet which are disposed between the bottom unit and an outer decorative facing wall which is underneath the curtain wall.

4. A structure as claimed in Claim 3, characterized in that the drip member is provided with a drain hole for opening the water-tightly separated space to the outdoor side of the curtain wall.

5. A structure as claimed in any preceding claim, wherein an outdoor-side caulking is closely interposed upon a backup member between one end of a corner frame member of the unit type curtain wall and an outdoor-side vertical end member thereof and extending continuously in the vertical direction along a vertically extending space formed between the corner frame member and the outdoor-side vertical end member, an indoor-side caulking is closely interposed upon a backup member between the inner surface of the building wall and an



indoor-side vertical end member of the unit type curtain wall and extending continuously in the vertical direction along a vertically extending space formed between the inner building wall surface and the indoor-side vertical end member, and wherein the plurality of packing members are disposed between the outdoor side and the indoor-side caulking and are spaced apart from both the caulking.

6. A structure substantially as described with reference to and as illustrated in the accompanying drawings.
